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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/855,255	05/15/2001	Brent W. Edwards	RXSD 1008-1	8977
22470	7590	01/26/2005	EXAMINER	
HAYNES BEFFEL & WOLFELD LLP			PHAM, TUAN	
P O BOX 366			ART UNIT	
HALF MOON BAY, CA 94019			PAPER NUMBER	
			2643	
DATE MAILED: 01/26/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/855,255	Applicant(s) EDWARDS ET AL.	
	Examiner TUAN A PHAM	Art Unit 2643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-25, 27, 28, 31-42 and 46 is/are allowed.
- 6) ☒ Claim(s) 1-12, 26, 29 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/27/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see Applicant's Remark, filed on 09/27/2004, with respect to the rejection(s) of claim(s) 1-5 under Christensson et al. (U.S. Patent No.: 6,560,332) in view of Rao (U.S. Patent No.: 6,141,415) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made of Lee (U.S. Patent No.: 6,563,803) in view of Takada (U.S. Patent No.: 6,173,058).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-12, 26 and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (U.S. Patent No.: 6,563,803) in view of Takada (U.S. Patent No.: 6,173,058) and further in view of Cornelisse Pub. No.: US 2002/0076072).

Regarding claim 1, Lee teaches a method of processing a far-end signal and a near-end signal to produce a final signal, the far-end signal containing speech, the near-end signal containing speech and background noise (see figure 2), the method comprising:

removing a portion of the background noise from the near-end signal to create a noise-reduced near-end signal (see figure 2, near-end speech $V(n)$, HPF 206 remove the background noise, col.4, ln.17-37), and

combining the far-end signal with the noise-reduced near-end signal to create a combined signal (see figure 2, far-end signal $Y(n)$, summer 208, noise reduced signal $R(n)$, col.4, ln.17-65).

It should be noticed that Lee fails to teach amplifying the combined signal by the amplification gain to create the final signal. However, Takada teaches such features (see figure 2, amplifier 15, summer 14, col.4, ln.46-56, col.10, ln.1-10) for a purpose of amplifying the near-end signals.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of amplifying the combined signal

by the amplification gain to create the final signal, as taught by Takada, into view of Lee in order to reduce the background noise level in the communication system.

Lee and Takada, in combination, fails to clearly teach amplification gain based upon the near-end signal using a fitting formula for correction of hearing loss. However, Cornelisse teaches such features (see col.5, [0054-0056]) for a purpose of using fitting formula algorithms to adjust a gain.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of amplification gain based upon the near-end signal using a fitting formula for correction of hearing loss, as taught by Cornelisse, into view of Lee and Takada in order to reduce the background noise level in the communication system.

Regarding claim 2, Cornelisse further teaches the method wherein the act of determining the amplification gain includes determining the masking level (i.e., the sound pressure level) of the near-end signal (see col.2, [0027]).

Regarding claim 3, Cornelisse further teaches the method wherein the act of determining the amplification gain includes determining the sound pressure level (energy signal) of the near-end signal (see col.2, [0027], col.6, [0060]).

Regarding claim 4, Cornelisse further teaches the method wherein the act of determining the amplification gain includes determining the sound pressure level above the threshold of hearing audibility (see col.2, [0030]).

Regarding claim 5-9, Cornelisse does not teach the Fig 6 protocol, the Cambridge protocol, the NAL-NL1 protocol, the Independent Hearing Aid Fitting Forum

protocol, and the Desired Sensation Level input/output protocol. However, Cornelisse teaches fitting formula with protocol. Thus by choosing different type protocol as claimed would not involve any inventive feature since it is just a matter of selecting the type of protocol for a purpose of changing the operation of the amplification gain.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the fitting formula of Cornelisse by applying the use of different type of protocol in order to meet the characteristic of particular frequency band.

Regarding claim 10, Lee further teaches the method wherein the act of removing a portion of the background noise from the near-end signal includes filtering the near-end signal with a high-pass filter (see figure 2, HPF 206, col.4, ln.30-38).

Regarding claim 11, Lee further teaches the method wherein the act of removing a portion of the background noise from the near-end signal includes filtering the near-end signal with a high-pass filter and suppression of the DC component of the near-end signal (see figure 2, HPF 206, col.4, ln.30-38, col.7, ln.40-56).

Regarding claim 12, Takada further teaches the method wherein the act of removing a portion of the background noise from the near-end signal includes removing a portion of the background noise via the spectral subtraction technique (see col.4, ln.26-56).

Regarding claims 26 and 29, Takada further teaches a program storage device containing computer readable instructions that when executed by a digital signal processor perform the method of claim 1 (see abstract, sound processing unit).

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Regarding claim 30, Takada further teaches the telephone wherein the telephone is a cellular telephone (see figure 3).

Allowable Subject Matter

4. Claims 13-25, 27-28, 31-42, and 46 are allowed.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In order to expedite the prosecution of this application, the applicants are also requested to consider the following references. Although Leonidov et al. (U.S. Patent No. 6,654,463), Etter et al. (U.S. Patent No. 6,760,435), Marchok et al. (U.S. Patent No. 6,526,140), and Lindgren et al. (U.S. Patent No. 6,597,787) are not applied into this Office Action; they are also called to Applicants attention. They may be used in future Office Action(s). These references are also concerned for supporting the system and method of echo cancellation device for canceling echo in a transceiver unit.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Tuan A. Pham** whose telephone number is (703) 305-4987. The examiner can normally be reached on Monday through Friday, 8:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Curtis Kuntz can be reached on (703) 305-4708 and

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Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington VA, Sixth Floor (Receptionist, tel. No. 703-305-4700).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have question on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Art Unit 2643
January 10, 2005
Examiner

Tuan Pham



HUYEN LE
PRIMARY EXAMINER